Explosions in the gas conduits, or in the starting up of a new furnace, in this itself, are able to be more unpleasant and more dangerous than these explosions on reversal, which, however, nevertheless, have unfavourably influenced the life of so many chimneys. Such will be avoided by the adoption of long-known rules, according to which a newly-started producer may then only be connected with the gas conduits if it gives off faultlessly good gas ; that gas only may be admitted to the furnace after the gas flues have been completely swept clean of air, which is achieved by permitting the streaming out of gas into the atmosphere through an opening which is provided close in front of the gas inlet valve; and lastly, that gas be never admitted into a cold furnace, but that this must be always well preheated by means of solid fuel.

It would be decidedly desirable for gas-furnace working if one could conveniently and safely fix how much gas and how much air in each moment entered the furnace, but unfortunately, up to the present no instrument has been found which solves this problem in a practical manner. At present, one can only obtain disclosure as to the required amount of gas, by the very round-about way of ascertaining the amount of solid fuel required in a lengthy space of time, and from the carbon content of the same, and the composition of the gases produced during this space of time. The amount of air yields itself from the combination of values obtained for the gas, and the composition of the waste gases.

One is able, indeed, to easily assure oneself by means of the appearance, whether the furnace receives enough gas, but it is not so easy to make sure whether the air supply suffices and when and how much it gradually (perhaps owing to displaced chambers) decreases. The practical man, who daily observes his furnace, knows well when a deficit of it begins; nevertheless he would gratefully welcome an aid which informed him with safety the amount of air which his furnace continually received. On the basis of such specification, it would be safely possible to catch it up at proper times with a fan and considerably increase the production capacity of so many furnaces, and to lengthen their duration of life*